APPENDIX A

SCOPE OF SERVICES

Remote Field Transformer Coupling Technology

3.1 SUMMARY

The Contractor shall supply all test equipment required to perform an internal inspection of portions of the pre-stressed concrete pipeline identified in the Scope of Work for each specific project, using its patented Remote Field Transformer Coupling (RFTC), Sahara®, PipeDiver®, Electromagnetic (EM), Smartball Leak Detection (SMB), and Acoustic Fiber Optic (AFO) technologies. The purpose of the inspection is to identify, localize, and quantify the presence of broken pre-stressing wires in individual segments of pipe along the pipeline; make repair prioritizations, and locate an astray interconnection. The Contractor shall supply trained technicians, as required, to operate the equipment, perform the inspection, analyze the data, and provide a written report as outlined in the Scope of Work.

3.2 CONTRACTOR RESPONSIBILITIES

The Contractor shall:

a. Review all of the information provided by the County regarding the section(s) of pipeline to be inspected.

b. Expedite deployment of all equipment and crew to perform the service.

c. Conduct a one (1) day onsite meeting with the County prior to the inspection to evaluate if the insertion sites are sufficiently prepared for equipment insertion and to prepare for logistic coordination.

d. Specific to the RFTC inspection, do the following:

   i. Provide all RFTC data collection equipment, tools, and trained technicians, as necessary, to operate the equipment.

   ii. Collect RFTC data for the identified section(s) of pipeline.

   iii. Perform a comprehensive review and analysis of the data.

   iv. Perform a visual inspection to evaluate each of the pipeline joints in order to determine if any repair is necessary. Concurrently, a sounding inspection shall be performed using a 1/2 –inch steel pipe approximately ten inches shorter than the internal diameter of the pipe with caps at both ends to locate any hollow areas within the lining of the pipeline.

   v. Determine repair priority by performing a preliminary risk analysis for each distressed pipe with a specific design and cover height. The risk curves shall be presented in terms of pressures that produce different limit states for varying effective numbers of broken wires, accounting for

uncertainties and expected rate of progression of broken wires based on data that is not site specific.

e. Specific to the Sahara inspections, do the following:

i. Provide a list of locations where the Sahara® equipment will be inserted into the pipeline, as well as minimum clearance requirements for the insertion components that will be utilized.

ii. Provide a list of locations where additional 2" taps (if necessary) will be required for insertion of the Sahara® equipment.

iii. Provide the County with the minimum flow velocity that will be required for the inspection.

iv. Develop a project plan that is acceptable to all parties.

v. Provide all Sahara® Leak Location equipment, tools, and trained technicians, as necessary, to operate the equipment.

vi. Perform a comprehensive review and analysis of the data.

vii. Mark on the surface of the ground any leaks found and providing an estimate of the size of each leak (small, medium, large).

viii. Provide GPS coordinates of all leak locations and insertion sites.

f. Specific to the installation of AFO, do the following:

i. Supply, design, install and commission AFO System.

ii. Provide all AFO equipment, tools, and trained technicians, as necessary, to install and operate the equipment.

iii. Install AFO to provide near real time monitoring of pipeline 24 hours per day/7 days per week for the period identified by the County.

iv. Report all wire break activity Monday through Friday during normal business hours.

g. Specific to EM and SMB, do the following:

i. Review all the information provided by the County regarding the section(s) of the pipeline to be inspected.

ii. Provide and expedite all equipment and crew to deliver this service.

iii. Provide all EM and SMB data collection equipment, tools, and trained technicians to operate the equipment.

iv. Collect EM and SMB data for the identified section(s) of pipeline.

v. Perform a comprehensive review and analysis of the data.

vi. Determine repair priority by performing a preliminary risk analysis for each distressed pipe with a specific design and cover height. The risk curves shall be presented in terms of pressures that produce different states for varying effective numbers of broken wires, accounting for uncertainties and expected rate of progression of broken wires based on data that is not site specific.

h. Render confined space areas safe for the services by providing ventilation and monitoring of air quality; preparing and obtaining entry permits; providing personnel and equipment for communication and recovery; and meeting the requirements of federal and local government authorities.

i. Disinfect the equipment and personnel, including subcontractors and divers, as required by the Country and/or local codes and ordinances.

j. Deliver written Draft and Final Reports that detail the results of the inspection and analysis as defined in the project scope.

3.3 COUNTY RESPONSIBILITIES

The County will:

a. Provide information about the pipeline to the Contractor at least two (2) weeks prior to the inspection date including, but not limited to, plan and profile drawings, lay sheets, shop drawings, manufacturing details, and details of access structures, air valves, blow-offs, and main line valves – if available.

b. Obtain any required legal right-of-entry on the property at no cost to the Contractor.

c. Provide support personnel during the inspection for locating the access man ways, traffic control, and other support as necessary.

d. Require a complete drawing review of the pipeline to be performed by the Contractor prior to the inspection to identify any areas of concern. If the drawings do not accurately reflect the pipeline's in-situ condition, and obstacles are encountered that the tool cannot negotiate, the County and the Contractor shall work cooperatively to remove unmanned inspection equipment from the pipeline. Any costs incurred in such efforts shall be limited to the respective domain of the County and the Contractor.

e. Remove flanges at man way to provide access into the pipeline and maintaining safe access to the man way location throughout the inspection.

f. Excavate, de-water, shore up, and/or provide scaffolding of job area, all of which will comply with OSHA standards.

g. Render access locations safe for manned entry, including removing the pipeline from service, as necessary; vector and rodent control; ventilation and monitoring of air quality at specified access locations, if necessary; and meeting the requirements of federal and local government authorities.

h. Provide all supplies and equipment for disinfecting the pipeline as required by local codes and ordinances.

i. Provide the Contractor with the minimum and maximum flow velocities and pressures that the pipeline operates at.

j. If possible and not cost-prohibitive, prepare and/or modify existing pipeline fittings and structures as indicated by the Contractor to accommodate insertion of the equipment.

k. Provide and maintain safe and reasonable access to all insertion sites throughout the inspection and obtain public works and/or police permits, as required.

l. Operate the pipeline in a manner that will achieve the minimum flow velocity indicated in the project plan throughout the inspection.

m. Render confined space areas safe for the services, including locking and tagging pumps, valves and motors; de-watering areas to permit movement of persons and equipment; and vector and rodent control.

3.4 REPORTS

a. Draft Report: The Draft Report shall be delivered no later than six (6) weeks after the inspection. The Draft Report shall describe the RFTC technology and its limitations, discuss the project in general terms, identify the segments of pipe within the pipeline that have broken pre-stressing wires and rank these segments in quantitative estimates of broken pre-stressing wires in each pipe segment. The Draft Report shall be delivered in electronic format to the County to review for up to five (5) business days and provide comments to the Contractor Project Manager for inclusion into the Final Report. After five (5) business days, the Draft Report shall be made Final, with or without any comments provided by the County.

b. Final Report: The Final Report shall be delivered in both electronic and hard copy formats (5 copies of hard-copy format), and if adequate survey coordinates of the structures and pipeline are available or can be obtained during the inspection, it shall include an electronic map of the section of the pipeline inspected.

3.5 POST PROJECT SUPPORT

The Contractor shall provide support and answer questions regarding the inspection and Final Report for up to thirty (30) days from the date that the Final Report is delivered to the County, at no additional cost.

Justification/Input Document for "Bid Waiver"

Title: Remote Field Transformer Coupling (RFTC) Pipeline Assessments

RQWS1100019 ITB # _____

It is the policy of Miami-Dade County, to consistently purchase goods and services using full and open competition. The citizens of Miami-Dade County are best served when we make sound business decisions based on competitive bids or proposals. Early acquisition planning that includes DPM can help to avoid delays and to facilitate effective market research. However, there may be instances when other than full and open competition may be justified. When a user department(s) determines that other than full and open competition is necessary or in the best interest of the County, appropriate justification for that course of action must be submitted to the CA Office for approval and execution in order to waive the competitive bid/proposal process.

Please provide the information requested below to support the need and feasibility for waiving the competitive bid/proposal process.

Est. Value: $5,800,000

Purchase Requisition No. _____ Contract #: _____ Date Required: 6/14/2011 Comm. #: _____

Proposed Vendor: Pure Technologies, Ltd. Previous Contract #: _____ Estimated Cost: $5,800,000 BCC Date: _____

WASD water distribution and sewer collection prestressed concrete cylinder pipe (PCCP) transmission mains range in size from 42-inch to 102-inch. The department has recently experienced a number of ruptures in these transmission lines resulting in expensive and costly repairs. WASD Director John Renfrow declared an emergency situation and directed department staff to take whatever action is necessary to appropriately assess and determine the causes to minimize and assure these transmission mains do not rupture again. Pure Technologies, Ltd., the known innovative global leader in non-destructive water and wastewater pipeline condition assessment, was contacted for a firm proposal to perform an immediate assessment and condition report using Remote Field Transformer Coupling (RFTC) technology.

To assess and inspect the transmission mains, Pure Technologies, Inc. deploys a free swimming tool that utilizes RFTC®, a proven proprietary electromagnetic inspection technology for evaluating the current condition of pre-stressed concrete cylinder pipelines (PCCP). RFTC ® can identify distressed pipe sections within the water and wastewater pipeline infrastructure from which a detailed inspection report is then produced and presented to the department. This detailed report, which contains graphs ranking the highest risk to lowest risk of imminent failure and rupture allows WASD to target the maintenance, repair and replacement programs to where they are needed most. RFTC® equipment can be deployed to locate and quantify existing wire breaks along individual pipe sections in working and temporarily non-operating pipelines.

How it works
PipeDiver ® generates an electromagnetic field inside a PCCP and measures the changes within this field caused by broken wires. By providing information on the number of broken wires in each pipe, PipeDiver ® enables the most effective remediation strategy to be put into action.

RFTC® is often used as a first step in a long-term management program for prestressed pipelines. Once the survey is completed and the current condition of the pipeline is determined, a long-term acoustic monitoring program can be instituted, in conjunction with a GIS-based structural risk management program, to ensure the long-term integrity of the asset.

RFTC® is a proven proprietary electromagnetic inspection technology for evaluating the current condition of pre-stressed concrete cylinder pipelines (PCCP).
Owners of water and wastewater pipelines can use RFTC® and PipeDiver to identify distressed pipe sections within their infrastructure. This allows them to target their maintenance, repair and replacement programs to where they are needed most.

Remote Field Transformer Coupling (RFTC) is a non-destructive type of pipeline condition assessment technology was first introduced in 1997. The advantage the RFTC technology has over conventional technologies that provide recorded video inspection results is that the RFTC transmits a signal, when combined with the patented software is able to detect and locate the number of damaged or broken prestressing wires located inside the PCCP Pipe. All of the results and information are presented in a full assessment report that provides summary of damaged segments of the pipe and also ranks them in quantitative order of number of broken prestressing wires. Prestressed concrete cylinder pipe (PCCP), AWWA standard C 301, has both a unique design, and a unique mode of failure. In this type of pipe, the concrete core provides the compressive structural strength to the pipeline. The thin high tension wires keep the concrete core under compression.

The steel cylinder acts as waterproofing membrane. The primary failure mode for this type of pipe is through breaking of these high tension wires. Once enough of these wires break, either due to corrosion, physical damage, or a process called hydrogen embrittlement, the concrete core will no longer be under compression. As concrete is quite weak under tension, the concrete core will begin to crack, further weakening the pipe. After a certain number of the high tension wires are broken, there is so little support provided to the concrete core that the pipeline can burst catastrophically, resulting in a failure. The industry standard for quantitatively assessing PCCP, and the high tension wires, is to us Remote Field Transformer Coupling (US Patent # 6,127,823) via an approved Electromagnetic Test Equipment platform. Remote Field Transformer Coupling (RFTC) is a non-destructive method used to detect and quantify the amount of broken wires along all types of PCCP. During the test an exciter coil is used to induce a small electrical current in the steel wires. The current in the steel wires then induces a small current in a second coil called the detector. The amplitude and phase of the signal received at the detector will change depending on if the steel wire is broken or not. The change in the detector signal is then analyzed and an estimate of the number of broken wires is given. Pure Technologies Ltd. is the owner and developer of the aforementioned patent and the owner and developer or PipeDiver™, a free-swimming device that can inspect PCCP pipelines while they remain in operation. The RFTC equipment will be placed on the PipeDiver™, a neutrally buoyant, free-swimming platform. The device will be propelled through the pipeline via the flowing water. The complete inspection must be able to take place while the pipeline remains in full service and pressurized.

Being proactive and obtaining an immediate pipeline condition assessment will allow the department to plan and take appropriate action to avert another situation as described above. The two firms known to possess this advanced technology, Pressure Pipe Inspection Company, and Pure Technologies Ltd. have now merged and Pure Technologies, Ltd. is the only provider of this patented technology.

Gregory Hicks, CPPB (786) 552-8049
Contact Person and Phone #

Department Director's Approval

6-20-4
Date Approved